

**AMITY/BLUE RIDGE
INITIATION OF CERCLA INVESTIGATION
MEMORANDUM**

I. PURPOSE

The purpose of this Action Memorandum is to document, pursuant to the Guidelines of the National Oil and Hazardous Substance Contingency Plan (NCP), 40 CFR 300, et seq., the decision to initiate a CERCLA investigation, and such further CERCLA actions as may be subsequently determined appropriate, as authorized by Section 104 (42 USC 9604) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA; 42 USC 9601 et seq.), and Executive Order 12580, 52 Federal Register 2923-26 (January 23, 1987).

A release, or threat of a release, of hazardous substances, pollutants or contaminants that potentially pose a threat to public health or welfare or the environment, has occurred or may occur at the Amity and Blue Ridge mine sites (the Site) on and/or from lands under the jurisdiction, custody, or control of the USDA Forest Service, Ochoco National Forest (National Forest System or NFS lands).

II. SITE CONDITIONS AND BACKGROUND

A. Site Location and Historical Activities

The Amity and Blue Ridge mines have been combined into one project because of being located within approximately one-mile of each other, being located in the same watershed, and other similar characteristics. The project will be known as Amity/Blue Ridge and it is anticipated the USDA Forest Service will be able to save dollars for the public by combining both sites.

1. Amity Mine

The Amity Mine is located in the west ½ of the southwest ¼ of Section 15, Township 14 South, Range 20 East. The Site is in Crook County. The Site encompasses an area of approximately 10 acres and is located at an elevation of approximately 5400 feet. The Site is moderately vegetated with large pines, brush, and open areas of grass. Vegetation along the waste piles is much less than the rest of the Site, and absent on several piles.

- 1929 – Site Discovered by W. J. Wesserling
Three claims established as: Money Spinner No. 1 and 2, and Surprise No.
- 1930 - Claims leased to Martin Paulson and Ivan Saylor
They formed the Johnson Creek Mercury Co. and started development.
17 flasks produced
- 1931 – 166 flasks produced with a small retort.
- 1932 – 67 flasks produced with eight D-tube retorts
- 1933 – Johnson Creek Mercury Co. was dissolved and the property reverted back to W. J. Wesserling, Ida Wesserling, and Emma Larson. Ownership was transferred to Emma Larson in April 1933. No production, only mine development.

- 1935 – Lawsuits involving ownership of the mine. Ernest D. Maltby purchased the mine.
- 1937 – Ownership transferred to the Homestake Mercury Mines, Inc. in mid-37 President of the mining company was Earnest D. Maltby This was a Washington Corporation.
- 1941 - Shareholders of the Homestake Mercury Mines were: Florence Cochran, Robert Olson, and Lewis Mills. Operated the mine and started living on the site year round.
- 1942 – Two flasks were produced with a small retort.
- 1944 – Property was leased to J. E. Morris, A. R. Morris, and E. B. Benson Benson formed the Amity Mining Co. and leased the property from Homestake Mercury Mines.
- 1945 – Four flasks produced
- 1946 – Eight flasks produced
- 1947 – Two flasks produced.
- 1948 – two flasks produced.
- 1949 – A 25-ton Herreshoff furnace was installed. Six flasks produced.
- 1950 – Five flasks produced.
- 1952 – A. R. Erspamer, of Seattle, and E. B. Benson created the Ochoco Mining Co.
- 1953 - The lease was taken over by the Ochoco Mining Co. Owen Pigmon, of Prineville, was the manager.
- 1954 – Owen Pigmon acquired a sublease from the Ochoco Mining Co. 76 flasks were produced.
- 1955 – 46 flasks were produced.
- 1956 – Seven flasks were produced. Legal proceedings involving lack or royalties between Erspamer and Pigmon caused the termination of mining operations.
- 1958 – Mining equipment, including the Herreshoff furnace and retort was removed.
- 1960 – Jennings Felix and F. Cochran acquired the property from Homestake Mercury Mines.
- 1980 – Pacific Mining and Development Company recorded claim of Amity Mine with Crook County Courthouse but not with BLM and moved a caretaker into a housing structure.

2. Blue Ridge Mine

The Blue Ridge Mine is located in the southeast ¼ of Section 15, Township 14 South, Range 20 East. The Site is in Crook County. The Site encompasses an area of approximately 35 acres and is located at an elevation of approximately 4880 feet. The Site is moderately vegetated with large pines, brush, and open areas of grasses. Several structures are present.

- 1929 - Discovery of mercury in the Johnson Creek Area by W. J. Wesserling.
- 1930 - Development of the Blue Ridge Mine, including the adjacent Number One Mine, by W. J. Wesserling (*Westerling* in the 1938 reference). Original mine consisted of 8 lode and placer claims located by W.J. and Ida Wesserling, W.J. La Porte, Edna Reichen and Lloyd Barney.
- 1930 - The Blue Ridge Mercury Company (BRMC) organized to operate the mine. Furnace and kiln erected for processing the ore. Production of 7 flasks.

- 1931 - Installation of Allis-Chalmers rotary furnace in August 1931. Production of 10 flasks.
- 1931 - Western Resources Inc. (WRI) leased the Mine from the BRMC in late 1931.
- 1933 - Production of 26 flasks under management of William Endicott of WRI.
- 1933 - Deed to Mine given to W. Endicott. Shaft sunk to 100-foot level and drifting done.
- 1935 - Oregon Cinnabar Inc. leased the property. Two 10-pipe banks of retorts installed.
- 1936 - Two flasks produced.
- 1937 - 15 flasks produced.
- 1937 - W.E. Shenker acquires property.
- 1937 - Site visit by Schuette observed a shaft 8 feet by 16 feet, approximately 100 feet deep, and containing about 100 feet of drifting, at the Site. (The presumed location of the shaft is labeled as Shaft #2 on Figure 2).
- 1938 - C.T. Takahashi acquired property. Central Oregon Quicksilver Mines, Inc. organized as operating company.
- 1938 - 30 flasks produced.
- 1939 - 8 flasks produced
- 1940 - 54 flasks produced
- 1938 to 1940 - Production at various mills surrounding the area (i.e., Horse Heaven, Mother Lode, and Taylor Ranch Mines).
- 1941 - Cinnabar Mines, Inc. organized to work both the Blue Ridge and Number One Mines.
- 1942 - A 75-ton Gould rotary furnace and condenser system installed at the Site.
- 1942 - 81 flasks produced.
- 1943 - 9 flasks produced.
- 1944 - 3 flasks produced by Gilkey Brothers.
- 1944 - Furnace and equipment removed from property.
- 1945 - Number one Mining Co. taken over by Central Oregon Quicksilver Mines, Inc and included with Blue Ridge Claims.
- 1952 - Roy C. Stanton acquired the property.
- 1953 - Mine leased to Fred Weber. Weber installed jigs, a washing plant and concentrating tables.
- 1954 - 6 flasks produced
- 1955 - 8 flasks produced in a small retort.
- 1957 - Mia Mines, Inc., headed by Frank Reid and Dick Tooley, leased the property and erected gravity concentration mill. Reportedly, produced small amounts of mercury in small portable retorts. No recorded amounts.
- 1958 - Property reverted to Stanton and the mill was eventually moved to the Independent Mine.
- 1959 to ~~1995~~-1996 - Frank Reid worked and operated the Blue Ridge Mine. It is not known the exact amount of mercury that was produced during this time. Mr. Reid and Mr. Tooley are deceased.

B. Site Characteristics

The Amity and Blue Ridge mines are within Johnson Creek subwatershed in Howard/Johnson watershed. They are located on the east side of Round Mountain on the Big Summit Ranger District, Ochoco National Forest. The watershed is considered Category 2 for monitoring PACFISH/INFISH. In general, the mines are underlain by a mixture of landslide debris, air-fall tuff and basalt. Large-scale dormant landslides are widespread across the subwatershed.

Amity and Blue Ridge mines are underlain by the Clarno Formation (Tca, Eocene to lower Oligocene, 41-34 Ma). It is composed of lava flows, mudflows, and small amounts of tuffaceous rocks (Swanson, 1969). The lava flows are principally andesite, with lesser amounts of basalt and quartz basalt. The plugs, dikes and irregular intrusive bodies of basaltic andesite represent some of the vents for the Clarno Formation (Swinney, 1968). These dikes and intrusive bodies are commonly associated with mercury mineralization, along with northeasterly trending faults in the area. A fault trace, trending northeast, passes through both Blue Ridge and Amity mines.

A small finger of the John Day Formation (Tsfj, middle Oligocene to early Miocene -- 32-25 Ma) underlies the eastern portion of the Blue Ridge mine. The formation consists of bedded tuff, lapilli tuff and tuffaceous sedimentary rocks. Direct deposition and reworking of the tuffs by wind, streams and sheet wash formed the volcanoclastic rocks (Swanson, 1969).

Picture Gorge Basalt (Tgp) lies to the northeast of Blue Ridge mine, along Winter Creek. The basalt was deposited between 15 to 16.4 Ma.

The development of the scenic cliffs and spires are due to natural erosion processes. The related tectonic fault traces, visible on the aerial photographs, have influenced the development of drainage patterns. The mass wasting process includes the formation of talus slopes, deep-seated landslides, slope creep, rock topples, debris flows and earth flows.

Based on an air photo interpretation, dormant landslide terrain underlies the Amity mine and is present in the draw above the Blue Ridge mine. The majority of the dormant landslide terrain originates on Clarno Formation within the watershed. The risk for potential mass wasting has increased in those areas underlain by dormant landslide terrain, Clarno Formation and landslide debris. Perched ponds and springs are located along the benches nestled within the landslide scarps. When the dormant landslides were more active, they contributed a portion of the existing sediment currently occupying the flood plains of the stream courses. Based on limited stream surveys, there is evidence that the stretches of Johnson and Winter creeks with greater than 20 percent cutbank erosion are adjacent to the toes of dormant landslide terrain.

Massive rotational slump and earth flow landslides were the predominant land forming processes in the past. The dormant deep landslides, which shape the analysis area, were probably active throughout the past 1 million years. They were probably triggered by a combination of tectonic activity and high precipitation. They naturally adjust as the streams cut the toes of the landslide debris and as natural fires, insect and disease infestations removed vegetation, allowing increased precipitation to saturate the soils. Numerous seeps and springs are present all across the analysis area, confirming the scrambled nature of the landform.

History has shown the land to be responsive to rain on snow events, especially below the 4,500-foot elevation. When the landslide debris and the shallow ash soils are saturated, there is potential for an increase in slope movement, which has resulted in debris flows and small rotational landslides within the watershed. Above the 4500-foot elevation, the ground is generally still frozen and snow covered. Fewer debris flows and rotational slides occur in this region.

Both Amity and Blue Ridge mines are located between 5,400 ft. and 4,800 ft. in elevation. The upslope areas on landslide terrain are at a moderate to low risk for reactivation from rain-on-snow events, since the terrain will most likely still be frozen.

The landslide debris has reached equilibrium on the hill slopes. As the stream erodes the toe slopes, the natural balance is upset. Accelerated erosion can occur, causing a decrease in water quality as additional sediment is introduced into the system. The increase in sedimentation impacts fish habitat and populations. Protection of the toe slopes along stream banks will reduce erosion.

The toe slopes of the landslide debris and the mining related waste stockpile along the Johnson Creek are at a slightly increased risk for reactivation.

1. Amity

Total volume of contaminated material is 200 to 300 cy. However, Waste Pile B had a recording of 611 mg/kg and the acceptable PRG is 610 mg/kg. However, since WP B encroaches upon Johnson Creek and because of erosion by Johnson Creek on the toe of the waste piles, mercury in the aquatic environment was recorded as high as 0.39 micrograms/L and the ODEQ aquatic chronic criteria is 0.012 micrograms/L, therefore, this material needs to be removed and estimated volume is 3400 cy. Arsenic was recorded as high as 8.2 mg/kg and the PRG for arsenic is 2.7 mg/kg.

2. Blue Ridge

Total volume of contaminated material is estimated at 750 to 1000 cy. The highest concentration of mercury was recorded at 3,420 mg/kg and was associated with an old foundation believed to be the site where processing had occurred in the past. There was an anomalous reading for mercury at 258,000 mg/kg and was discovered in a borehole at 7 feet below the surface. Arsenic was recorded up to 25.6 mg/kg.

Arsenic typically averages between 5 to 18 mg/kg in Oregon

C. Release or Threatened Release into the Environment of a Hazardous Substance, Pollutant, or Contaminant

A PA and SI have been completed and high levels of both mercury and arsenic have been identified at the project Site. A PRP search is being conducted to determine if there are any viable parties to be held accountable for any cleanup action. The Forest Service is preparing to develop an EE/CA for the project Site. If the current project Site conditions persist, there is the potential for adverse chronic and acute health effects on human and wildlife entering the area.

D. Actions Taken on the Site

Recent actions taken at the Site include:

1. PA with chemical analysis was completed by CES, April 2001.
2. SI was completed by CES, April 2002.
3. PRP search initiated.

III. PROPOSED ACTIONS AND ESTIMATED COSTS

The proposed action for the Site is to initiate CERCLA. In compliance with the NCP, an Engineering Evaluation/Cost Analysis (EE/CA) will be prepared. The EE/CA will review all sampling results, records of chemical usage, reasonable alternatives, ARARs, risk-based analysis of alternatives, cost of each alternative and will be used to select a preferred alternative based on these data.

The anticipated costs for the various aspects of the project are uncertain at this time. However, an estimate would be:

1. EE/CA - \$60,000
2. Implementation of a preferred alternative - \$220,000 to \$300,000

IV. ADMINISTRATIVE RECORD AND COMMUNITY RELATIONS

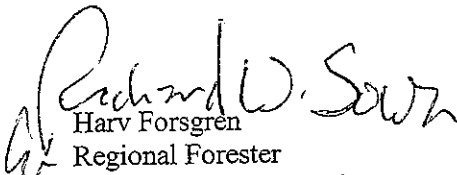
Pursuant to 40 CFR 300.415(m), I designate Dennis Boles of the Fremont National Forest, Lakeview Ranger District, as the On-Scene Coordinator and Virginia ~~Gibbons~~ Gibbons ~~for of~~ the Ochoco National Forest as Spokesperson for the project.

A community Relations Plan will be developed for this project. The Administrative Record for any response action selected will be compiled and made available during regular business hours at the office of the Ochoco National Forest, Prineville, Oregon. A Notice of Availability of the Administrative Record will be published in local newspapers.

V. DECISION

By this Memorandum, I am initiating CERCLA at the Amity/Blue Ridge site as appropriate.

By copy of this Memorandum, we are formally notifying the State of Oregon and EPA Region X of our finding of the appropriateness of CERCLA at the Site.


Harv Forsgren
Regional Forester
Pacific Northwest Region

cc:
Oregon DEQ